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CERTAIN FOODS IN RELATION TO TREATMENT.

BY

JOHN A. McCORKLE, M. D.,

Professor of Principles and Practice of Medicine and Clinical Medicine
in the Long Island College Hospital.

*Read before the Medical Society of the County of Kings,
October 18, 1887.*

[Reprinted from THE BROOKLYN MEDICAL JOURNAL, January, 1888.]



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Fashion has become a controlling element in the affairs of men, and we find it, all too frequently, extending its influence largely into the diet of the sick, as well as into the field of therapeutics, taking the place and oftentimes supplanting the well-marked indications of nature.

In sickness, pain admonishes to cease from toil; general weakness, to seek repose; and loss of appetite, to abstain from food; but the prevailing fashion tends to keep the muscles at work by massage, and force the digestive organs into work, while nature admonishes that rest is the essential factor in the treatment.

All the leading symptoms of acute disease point to the great therapeutic law of "Rest to the diseased organism." The stomach and bowels, in many diseases, are in no condition to digest food, and if by any means the entrance of nutrient material into the blood can be secured, it is still a question whether the ultimate cell will be able to appropriate the pabulum and utilize it in the process of nutrition; for after all, the *cell* is the essential factor in nutrition, and its function is often impaired by the presence of fever, abnormal circulation, and rapid metamorphosis.

In view of the importance of this subject much has been written, and much more will be contributed, ere we arrive at just conclusions. In a recent number of the *Journal of Reconstructives*, Dr. Roberts Bartholow contributes an excellent article on the misuse of milk in typhoid fever, rheumatism, and certain disorders of the digestive tract.

The subject of therapeutic food is one in which I am greatly interested, and I take this opportunity of presenting a few thoughts to the Society.

Milk has been called "the ideal food," and so it is to some extent; but there are many exceptions to its use. Does it not seem a little strange that among all the mammalia, man, in his sickness, is the only animal that returns to his infant diet or its congener, or continues it as an article of food in mature life!

There is grave doubt whether milk is not vastly over-rated as an article of diet. True, it represents all the elements in the proper proportions to support life indefinitely, but in certain diseases its various constituents cannot be well digested and assimilated.

In typhoid and other continued fevers, milk is considered the best food, and no doubt it is when properly administered. In all fevers of a continued type, as a rule, the tongue is coated, the secretions lessened and vitiated, the sensibility obtunded, and yet a quantity of food is often taken which would tax the digestive powers of the *healthy* organs.

Under such diseased conditions, the food is digested slowly and imperfectly, and the undigested portion is placed under the most favorable conditions for rapid chemical change, and as a result, gaseous distention, embarrassment of respiration and circulation, discomfort and danger ensue.

In typhoid fever we have the well-marked lesions of the intestinal tract, tenderness, tympanitis, diarrhœa, and general hyperæmia of the whole intestinal mucous membrane, with its attendant interference of function. The function of the stomach is less impaired than that of the intestinal tract, and when nausea and vomiting occur, they not infrequently are the results of improper and the too frequent administration of food.

It must ever be borne in mind that the amount of food appropriated and utilized by the organism measures the value of aliment, and not the quantity taken.

In typhoid fever, and as a rule in continued fevers, the use of milk is indicated, and needs but the guidance of common sense in its administration. The casein, sugar, salts, and the albuminoid elements of milk are digested in the stomach, the fat in the bowels. If the bowels are unable to digest the fat, it undergoes the butyric acid change, and becomes, instead of food, a violent irritant, adding materially to the irritation of the specific disease.

What is here the indication? The use of skimmed milk. In skimmed milk we find all the ingredients digested in the stomach, and by its use rest is given to the inflamed bowel.

But in fevers the gastric digestion is necessarily slow, and even the most appropriate food must not be given at too short intervals. If the food is not disposed of, and the partially digested becomes mingled with the fresh amounts, the problem of digestion and absorption becomes a difficult one. Three meals a day answering the requirements in health, the effect of six meals would simply lead to functional derangement and disease, and the stomach requiring physiological rest in health, should it be wholly denied this advantage when embarrassed by disease?

Thus in the feeding of fever patients there are two well-marked indications:

1st. The food should be given at regular, but not too frequent intervals.

2d. Digestion should be aided, as far as possible.

It has been well said "that every sick person is a dyspeptic, for the time being," and this fact should have due weight in the management of acute diseases. In all ordinary cases of fever, once in four hours is often enough for the administration of food, and if milk or meat juice be the diet, after one and one-half or two hours digestion should be aided by giving a little dilute hydrochloric acid, well diluted. The water will prove beneficial in two ways :

1st. By supplying the waste caused by the rapid elimination of fluids, by perceptible or imperceptible perspiration ; and 2d, by facilitating absorption by osmosis.

Again, HCl. is valuable, not only as an aid in completing digestion, but also as a disinfectant. It is well known that all chlorides are more or less disinfectants, whether as sodium chloride, calcium chloride, or hydrogen chloride as HCl. This action is very essential ; for under the influence of fever vitiated secretions are very liable to give rise to fermentative changes, which cause the distressing symptoms already referred to.

This is almost a routine management with me, and one to which I am very partial. In all fevers of a continued type, especially when the inflammatory element in the bowel is superadded to the specific disease, as in remittent, bilious remittent, and typhoid fevers, there is positive indication for the use of food which is fully digested in the stomach, and which leaves as little residue as possible.

It may be said that fever patients need a more liberal supply of the carbohydrates ; and nature has made an admirable provision for just such a demand by an abundant supply of available fat, in and around the muscles and elsewhere about the body. Thus the fever patient who emaciates, gives promise of a good prognosis, for he is able to use his stored-up force.

But the food suitable in one form of fever may be objectionable in another. For example, in rheumatism milk is almost wholly contraindicated, from the well known confirmatory fact, that the prolonged use of lactic acid, as in diabetes, is not infrequently followed by rheumatic attacks ; and in experiments upon animals, it has been found that when lactic acid has been injected into the tissues, the joints become swollen and show every symptom of acute rheumatism.

When milk is taken in acute rheumatism, it is very liable to undergo the lactic acid fermentation, and as a result we unwittingly add to the disease, while attempting to support our patient. Here the food problem becomes an important one. If it is desirable to give a liquid diet, cream may be given well diluted, and with a liberal supply of common salt. In cream, the fat exists in a state of high subdivision, and it is

very readily assimilated. The bowels not being especially disturbed in this disease, although their function shares in the general weakness of the organism, the carbo-hydrates are digested and assimilated.

But cream can form but part of the food. In rheumatism there is a marked tendency to the formation of acid. This tendency must be antagonized, and this principle of treatment was recognized by the older practitioner who employed the alkaline treatment with marked success.

The cause of rheumatism should be a guide to its dietetic treatment. The vegetable salts are especially serviceable when given in the form of food; not to supplant, but to aid in the general treatment. These salts have much to recommend them, being well borne by the stomach, and far easier of assimilation than those prepared in the chemist's laboratory. Nature in her own inimitable way unites the atoms, builds up molecules of these salts, in a manner best suited to the animal structure. In short, one of the functions of the vegetable kingdom is to prepare the mineral constituents for the use of the higher and animal life.

In rheumatism and all acid diseases akin to it, the well prepared vegetable soup becomes a valuable part of the dietetic treatment.

It is our duty not only to cure disease, as the term is generally accepted, but to prevent disease as far as possible; and by the careful preparation of vegetable food, we may be able to prevent many diseases, or at least hold them in abeyance.

The subject of cookery here claims attention. Much of the cookery of the present day is so conducted as to eliminate nearly all of the salts of the vegetable. The potage is thrown away; and when the food is ready for the table it is simply devoid of the vegetable salts, and in many cases almost indigestible. This result is familiarly seen in boiled cabbage. The uncooked leaf is easy of digestion, and an excellent and very palatable article of food, but the well-cooked cabbage is an abomination. And what is true of cabbage is equally true of carrots, turnips, cauliflower, peas, beans, and many other vegetables in common use.

Is it any wonder, with all the salts of the vegetable extracted through the ignorance of the first principles of cookery, that acid diseases, such as eczema, scurvy, urticaria, etc., should be so common. To prevent these diseases, our therapeutics should begin in the kitchen. The vegetable should be so prepared as to retain all the salts, and should become a part of the daily food. The salts were intended for use in the animal economy, and, when not supplied, the system is robbed of an essential ingredient of food, and will always respond by discomfort and disease.

It has been often observed that children affected with various forms of cutaneous disease do not improve on a liberal milk diet, and the

reason is plainly apparent—the milk increases the acidity and contributes an important share to the vicious circle. Withhold or diminish the amount of milk, give the child, as a part of its daily diet, properly prepared vegetable broths. To the broth or “stock” should be added the whole vegetable, rejecting only the woody and insoluble parts; rice, barley, or other farinaceous food may also be added, thus improving the nutrient quality. Children soon learn to relish these vegetable soups, and the change in the nutrition of the skin becomes speedily manifest.

The acid condition, or rather diminished alkalinity of the blood, may lead to other manifestations seemingly more remote, but none the less true as to their origin.

Cases like the following not infrequently occur: A child is taken sick with a fever, with all its attendant symptoms—there may be some nausea and vomiting; pain is a prominent symptom, which the child refers to the stomach. The doctor is called, and in the hurry of professional life, and the frequency of such symptoms in children, hastily concludes that the fever and pain are due to gastric irritation—the child has eaten something which has disagreed with it; and upon this diagnosis the treatment is based, and fortunate will it be for the patient if it be of the expectant plan.

The fever continues somewhat longer than the diagnosis would warrant; but after a time the child makes a fair recovery, and the illness is soon forgotten. But after a variable time—one, two, or three years—the doctor is called to examine the child on account of a cough. Obtaining the previous history of the patient, he finds no evidence of any serious illness in the past. On examining the chest, he is surprised to find a heart-murmur, and greatly wonders when the child had rheumatism. Such instances are not infrequent, as shown by the number of cases of cardiac disease found in children without any previous history of endocarditis.

There is reason to believe that the inordinate use of degenerate milk has contributed to these unfortunate events. Often the milk is not far from acid when drawn from the cow, especially if stall-fed; and it is actually acid in the case of the swill-fed cow, as shown by numerous observations. Add to this the churning of the milk in its delivery, and the means sometimes employed in its preservation, chemical and mechanical changes occur which render it more or less objectionable as the principal article of diet for children.

There is a widespread belief that if a child partakes largely of milk, its proper growth is assured, and health the inevitable result. This belief had its origin in the condition of things as found in the country, where children are fed on good, pure, fresh milk, have plenty of out-

door exercise, and withal a liberal supply of fresh fruits and vegetables ; but for city children, with their artificial modes of life and unwholesome milk supply, a somewhat different diet is desirable. Milk should not be interdicted, but other forms of food should be given greater prominence.

As is well known, there is more or less prejudice in the public mind, and also in that of the profession, against the use of fruits and vegetables of a sour taste, when there is a tendency in the organism to acidity and to the production of acid diseases ; but this is often without foundation. The various acids usually exist in the vegetable in combination with potash, and are, as a rule, easily oxidized, being converted into carbonic acid and water, thus contributing to the production of animal heat. At the same time the potash is liberated, and aids in maintaining and increasing the alkalinity of the blood, and finally the alkali unites with the nitrogenous elements in the retrograde metamorphosis and promotes their safe elimination from the body.

Occasionally in certain respiratory, circulatory, and depressing diseases, the oxidation of certain acids is imperfect—oxalic acid is formed, and oxalate of lime appears in the urine. This is frequently true of citric acid, which will account for the objection to the use of lemonade in urethral diseases, as maintained by Dr. Rand in his valuable paper read at our last meeting.

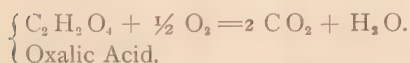
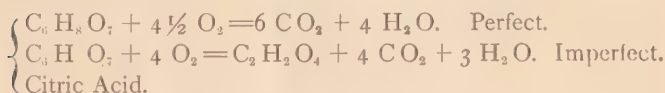
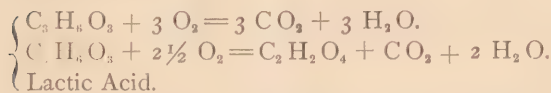
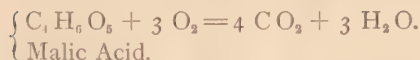
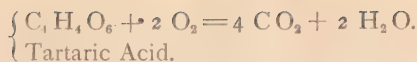
I am greatly indebted to our excellent chemist, Dr. E. H. Bartley, for much confirmatory knowledge, and for the preparation of the chemical formulæ, which it will be seen very generally coincide with clinical facts.

The chemical changes which occur within the body may be quite different from those without ; but taking the clinical facts and chemical results into consideration, we are enabled to arrive at fairly definite conclusions.

Herewith is presented a table of several well-known acids, with the number of oxygen molecules required to completely oxidize one molecule of acid :

Formic Acid oxidized by $\frac{1}{2}$ molecule of oxygen.				
Malic	"	"	1	" "
Tartaric	"	"	2	molecules "
Lactic	"	"	3	" "
Citric	"	"	$4\frac{1}{2}$	" "

Formic, malic, and tartaric acids are readily oxidized into carbonic acid and water, and show little tendency to form oxalic acid ; while citric and lactic acids resist the action of oxidizing agents to a considerable degree, and with a marked tendency to form oxalic acid.



The explanation of this action on the part of citric and lactic acids is not known, as far as I am able to learn ; but the chemical and clinical facts concerning them are in full accord.

Lactic acid has been largely recommended, upon good authority, as a useful digestive agent, but it is objectionable in all cases when from any cause there is deficiency of oxidation.

Thus it is not a matter of indifference as to the kind of food used even in health. Persons suffering from the gouty, rheumatic, or lithic diathesis should have, as a part of their daily diet, a portion of food rich in vegetable salts, and should be taught the untoward action of milk in all acid diseases.

The subject of cookery has received far too little attention from the medical profession. In fact our prophylactics and therapeutics should begin in the kitchen, and, if need be, end in the drug store. The old doctor who was always on friendly terms with the denizens of the kitchen, and who gave as his reason that without them most of the doctors would be in the poorhouse, was not far from right, for even among the wealthy and well-to-do much of the food is spoiled in the cooking.

This subject has been admirably discussed in a popular way, in a recent work by Dr. Matthieu Williams.

In fact, as physicians, if we would give more attention to the preparation of food and less to the new pharmaceutical preparations which convert our office desks into miniature forests of bottles through the enterprise of the manufacturing chemists, it would be better for our patients.

DISCUSSION. .

Dr. E. H. BARTLEY.—I am always interested in a paper on the subject of rational therapeutics. As a rule, there is entirely too much empiricism to be satisfactory to me. I once had a theory that everything

in medicine might be reduced to a scientific nicety. Practical experience has led me to give up that idea. The doctor has stated that malic and lactic acids do not oxidize with the same ease. This is due to the different structures of the molecules of these acids. In looking over the order of their arrangement as to ease of oxidation, I noticed that this was the exact arrangement independent of the oxygen required. It would seem that the clinical facts would accord with the results obtained by simply taking the quantity of oxygen absorbed. By studying the oxidation of these different acids outside of the body, we can form a pretty good idea of their oxidation inside of the body. In the case of defective hepatic action, we expect a defective oxidation of these salts, and also get the same in obstructions of the skin. We expect oxalate of lime in all diseases of the liver, skin, and lungs, and we all know that in phthisis the urine is thoroughly loaded with urates. It occasionally happens that the urine is almost like milk from the precipitation of uric acid even before it cools.

The acid salts of potassium play a very important part in the process of oxidation in the body. The administration of alkaline salts after a time interferes with gastric digestion by simple neutralization of the gastric juice, or by rendering the blood more strongly alkaline and affecting all the acid secretions. The alkaline secretions are increased by the alkalis. The administration of acids increases the gastric juice, the acidity of the urine, and the functional activity of the liver. This is why fruits are better than neutral salts, because we have here the acid which assists digestion, and after it has passed the stomach it renders the blood more strongly alkaline and increases the flow of bile and pancreatic fluid. It increases both the digestion in the stomach and the secretion of the alkaline fluids. The administration of these alkaline salts has an additional benefit. They neutralize the uric acid and assist in getting it out through the kidneys.

Uric acid is a product of deficient oxidation. This may accumulate in the blood by a deficient hepatic activity, and therefore we want a liver stimulant to get rid of it. It may come by the loss of oxidation due to a less alkaline condition of the blood. The administration of fruits and their salts increases the alkaline condition of the blood, and burns up these waste products more completely than it would without their administration. This is the probable explanation of the alkaline treatment of rheumatic affections. I have often been struck by the condition of the liver in typhoid states, and the importance of keeping that organ up to its functional activity. We know that peptonoids are poisonous when introduced directly into the circulation. I have tried to administer peptonized food in such cases, and always with unfavorable results. I attribute it to the fact that the liver would allow the peptonoid to pass directly into the circulation.

The liver has its chief functions in destroying peptones and poisonous substances which are found in the blood. In all rheumatic conditions there is very apt to be what is known as acid dyspepsia. This is probably due partially to the poisoning of the blood by debris. The administration of these salts affords a better result than the administration of the alkalies in the treatment of rheumatism, for the reasons I have stated.

Dr. J. M. VAN COTT, Jr.—We find, as we advance in our knowledge of the make-up of any living being, that to the cells which compose it are due the functional activities of that being.

A cell is automatic ; it responds to stimulus ; it ingests, digests, and egests. In these properties lie the functional activities of the cell. Over-stimulation of the cell destroys its function. The cell from which a living being originates multiplies into numberless cells, which differ in regard to their functional activities. After the cells have become differentiated, the various functions of the body are maintained by different sets of cells.

Cells subjected to the over-stimulation of disease manifest an increased action, which induces an alteration in their ultimate structure. This alteration is of a degenerative nature, *e. g.*, a fatty degeneration, and induces change in function, incapacitating the cell for its work in proportion to the degree of the degeneration.

One of the most obvious functions of the cell is the appropriation of materials for its sustenance and propagation. The cells require a certain amount of food at regular intervals for their nourishment. This food, under normal conditions, must be capable of easy absorption by the cells ; much more is this a necessity when the the cells have become crippled in functional capacity by the continued over-stimulation of high temperature and other processes of disease. As the food enters the body it must pass the great barriers of cells before it fulfills its purpose. First it must be acted upon and appropriated by the epithelium of the digestive tract, and then, by absorption by blood and lymph, it is utilized by all those vast areas of cells which go to form the tissues of the body.

It is important, therefore, in conditions of disease—especially fevers—that the food should be of such a nature as to be appropriated by the crippled cells at the least expense of their energy. By this means the food passing the first barrier of cells will be in greater amount, of better quality, and much more easy of absorption by the second series of cells.

Just here it seems to us the doctor has struck a key-note in the treatment of the fevers.

In regard to medicinal agents, those remedies whose properties are

to assist in the preparation of the food in the stomach for absorption, and the maintenance of the vitality of the cells, would seem best calculated to render service; and here may be classed certain of the acids and nervines.

Dr. H. W. RAND said he had been especially interested in what Dr. McCorkle said of the results of imperfect oxidization. He had at present two cases under treatment, which might prove of some clinical interest in this connection. One is a boy, fifteen years of age, who has been troubled with nocturnal incontinence of urine for some years. This has been most marked during the spring and summer months. The patient is very fond of fruit, and has been accustomed to indulge in it to excess. The urine was found to be loaded with oxalate of lime crystals, which rapidly disappeared when he was deprived of fruit, and with the disappearance of the crystals his incontinence nearly ceased without treatment.

The second case is that of a lady, who has been troubled at times, for some years past, with an irritable bladder. She has found that lemons, sour oranges, tomatoes, strawberries, and even grapes, if she indulges freely in them, act as exciting causes. He had only examined the urine once in this case, and had found an abundance of oxalate of lime crystals, which he believed to be the cause of the patient's local trouble.

Dr. S. SHERWELL said he had had an inkling of what was to be the general drift of the paper, was prepared to comment favorably, and now had nothing further to do but emphasize his agreement with all of the writer's conclusions. He had long been of the opinion that milk in great quantity, poured into sick people and infants without any regard to their digestive capabilities, was a mistake—sometimes he even thought a fatal one. Especially does he so believe in diphtheritic states and the like. In judicious quantity, and always alkalinized, it was a food, but excess became a burden. As to what the doctor had said in regard to its use, or over-use, in connection with skin diseases mentioned, he was sure Dr. McCorkle was right, and that many of the cases of infantile and other eczemas, etc., were simply forms of skin irritation, caused by an attempt of the skin vicariously to oxidize effete elements, that the intestinal tract had not been able to properly care for.

